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2021 - 2026

Weapons Research Services Strategic Plan



Executive Summary

The WRS Strategic Plan was developed to communicate strategies, goals, and long-term objectives of the Weapons Research Service Division to our staff, customers, partners, and the Lab. Not only does this ensure our customers understand what we offer them and why, but it also ensures each staff member in WRS understands the Division's direction and priorities.

The development of a purposeful strategy encourages alignment of our Division's mission with that of the Lab. This alignment positions WRS to make meaningful contributions to the Lab's national security work – specifically, the Lab's Weapons Systems Capability Pillar, among other tenets of our institutional framework. Because the focus of this pillar is integrated system research and development, the WRS Division is essential to these efforts. The Division's services include increasing the Lab's advanced knowledge of weapons physics, engineering, and production work to develop the next generation of weapons systems.

To guide us to success, WRS has identified strategic goals as well as organizational goals. Both sets of goals were developed with the intent of providing critical support to the Lab's programs and organizations that contribute to LANL's national security work. Our organizational goals focus on further developing the WRS culture – how we do our work is just as important as the work we do. Meanwhile, our strategic goals are aligned with the Division's primary services and are focused through four strategic initiatives, each of which demonstrates services vital to the Lab achieving mission success.

The WRS strategic initiatives:

- 1. National Security Research Center:** Grow the collections and continue the expansion of staff services to strengthen the work of the Lab's Weapons Program scientists, engineers, and manufacturers by increasing their efficiency and productivity.
- 2. Nuclear Science Data Solutions:** Improve the coordination of LANL's nuclear science data, including its collection, integration, storage, and access, to ensure improved research and quicker development of solutions for the Lab's Weapons Program

3. Weapons Knowledge Management: Increase program development that ensures information is captured, organized, integrated, and transferred in order to mitigate knowledge loss while assuring knowledge sharing within the Weapons Program.

4. Nuclear Weapons Cyber Assurance Laboratory: Expand risk mitigation in the Weapons Program through cyber-physical and software vulnerability assessments to ensure more secure research, design, production, and testing processes for the Lab.

The WRS organizational goals:

- 1. Operational Excellence:** Improve the daily operations of the WRS Division, including the tasks and requirements needed to run the business of the Division.
- 2. Outstanding Staff:** Recruit, develop, and retain professionals who assure success for our customers and demonstrate a passion for our mission.
- 3. Strategic Partnerships:** Improve responsiveness to customer needs by growing partnerships with internal and external organizations to more effectively meet those needs.
- 4. Fiscal Management and Financial Growth:** Develop positive management relationships with federal and internal organizations as well as demonstrate excellent fiscal management on an annual basis to facilitate continued resource growth.
- 5. Effective Messaging:** Develop and implement tactical strategies to reach general Lab audiences and WRS customers and stakeholders.

Our strategic initiatives are aligned with the Division's primary services; each initiative demonstrates services vital to the Lab achieving mission success. Our organizational goals will improve our pathways to deliver these vital services.



Carla Breiner
Weapons Research Services,
Division Leader



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The WRS Strategic Initiatives



National Security Research Center

Increased value in partnerships with organizations across the Lab and the Nuclear Security Enterprise, improved speed and quality of our digitization services, and continued growth of the collections, all of which will strengthen the value the NSRC provides to the Lab as well as the nation.



Nuclear Science Data Solutions

Improved coordination of LANL's nuclear science data, including its collection, integration, storage, and access, to ensure efficient and effective research for the Lab's Weapons Program.



Weapons Knowledge Management

Increased implementation of technical knowledge capture, classified video asset management, and WRS-supported learning. This improves employees' contribution to the LANL mission by bolstering their knowledge of the Weapons Program's mission, structure, roles, objectives, and Programs. Initiatives include video knowledge capture (ReGenerate), classified weapons video management (Weapons Video Service), and knowledge transfer (Nuclear Fundamentals Orientation).



Nuclear Weapons Cyber Assurance Laboratory

Expanded risk mitigation in the Weapons Program through cyber-physical and software vulnerability assessments ensures more secure research, design, production, and testing processes for the Lab. Specifically, the NWCAL's highly trained staff performs malware reverse engineering, malware impact analysis within existing engineering packages, software and firmware scanning, and cyber-physical analysis and assessments.

The WRS Organizational Goals

The systematic process of developing a Division-wide strategic plan defines our goals, provides direction for our staff, formalizes our resource allocation, prioritizes our efforts, and reinforces our vitality to LANL's mission work. The Division is confident we, and in turn the Lab, will succeed.

Operational Excellence Improve the daily operations of WRS, including the tasks and requirements needed to run the business of the Division.

Outstanding Staff Recruit, develop, and retain professionals who assure success for our customers and demonstrate a passion for our mission.

Strategic Partnerships Improve responsiveness to customer needs by growing partnerships with internal and external organizations to more effectively meet those needs.

Fiscal Management and Financial Growth Develop positive management relationships with federal and internal organizations and demonstrate excellent fiscal management on an annual basis to facilitate continued resource growth.

Effective Messaging Develop and implement tactical strategies to reach general Lab audiences and WRS customers and stakeholders.

Introduction

The Weapons Research Services (WRS) Division provides Los Alamos National Laboratory with services, resources, and staff that are critical to fulfilling its national security mission. WRS serves the entire LANL Weapons Program and is housed within the Weapons Physics Directorate (ALDX), which is at the core of the design, certification, and assessment of the nation’s nuclear weapons.

More specifically, WRS is a research and development organization that provides unique tools designed to meet the specific needs of the Lab’s weapons mission rather than administrative or Information & Technology (IT) tools used broadly by the Lab. WRS partners with other LANL organizations, including Global Security to conduct mission research and I&T organizations to meet basic IT infrastructure needs.

WRS contributes to the national security mission through:

- The management and accessibility of the classified library and its collections;
- The oversight and development of secure weapons program network systems, software, and operational technology tools; and
- The capture and dissemination of multidisciplinary knowledge and experimental data.



Our Mission

Protecting our national security by preserving and safeguarding nuclear knowledge for tomorrow’s discoveries.



Our Vision

To lead the nation’s nuclear weapons research through our expert staff, comprehensive collections, and state-of-the-art services.

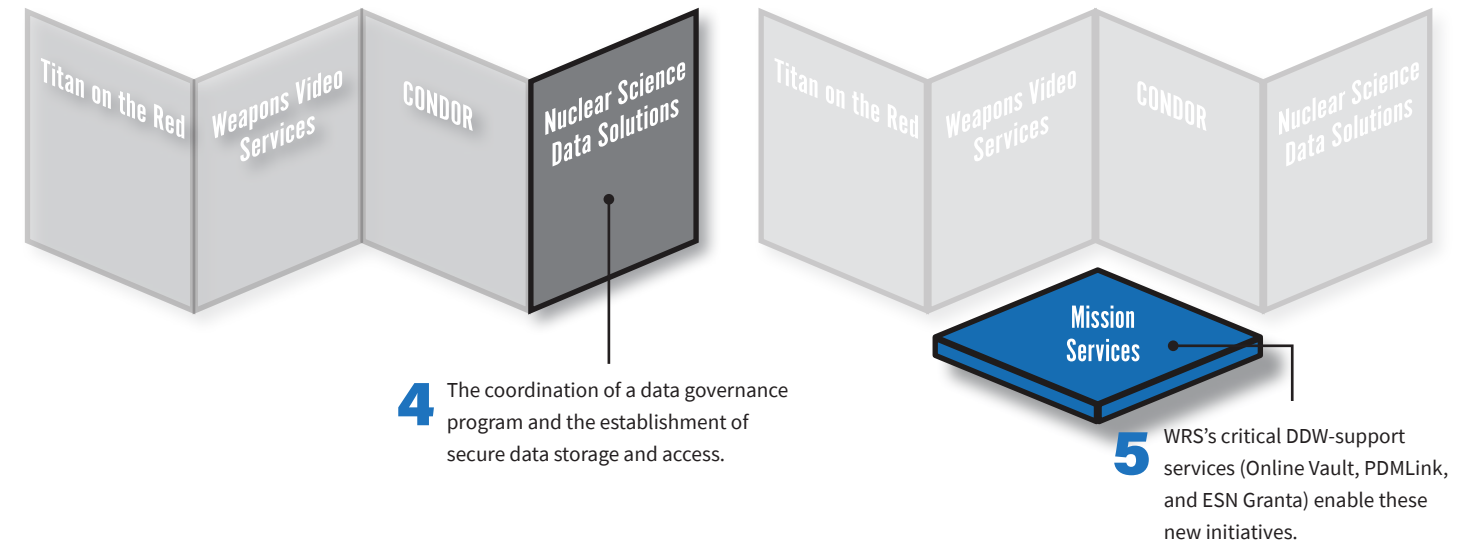
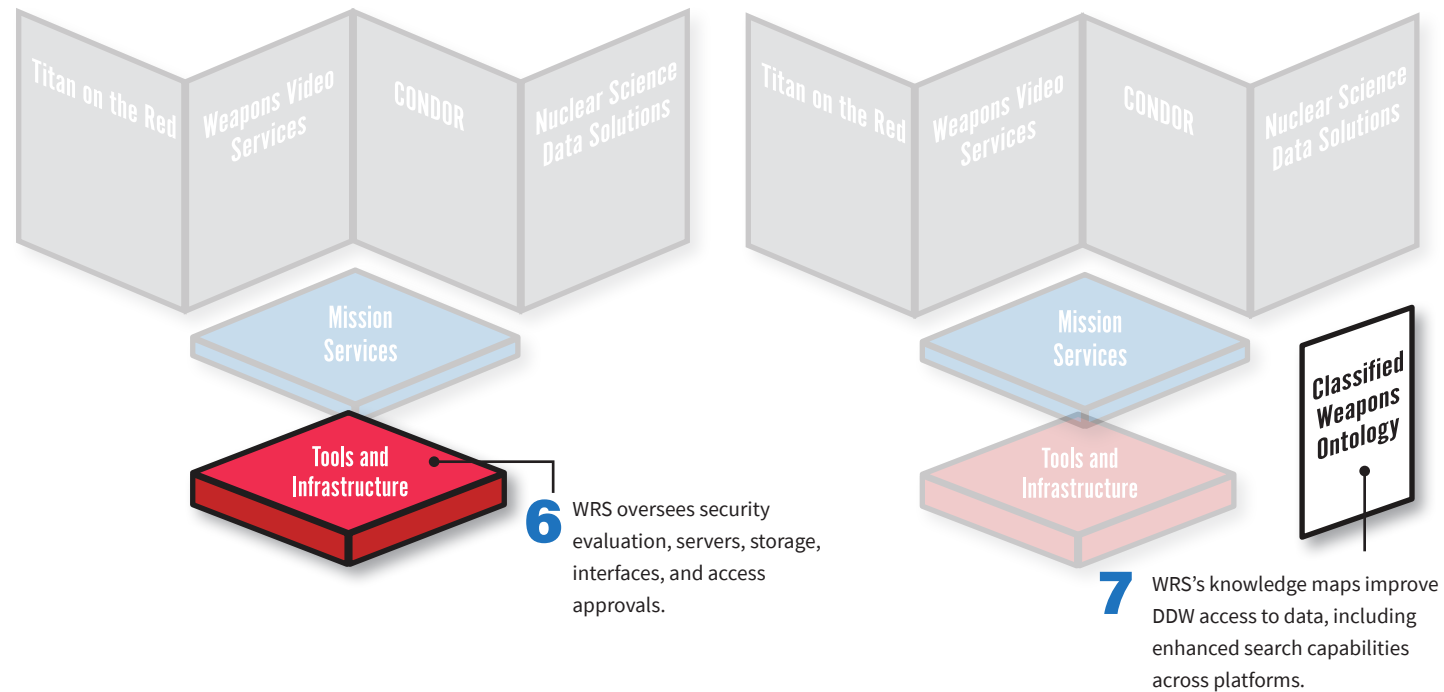
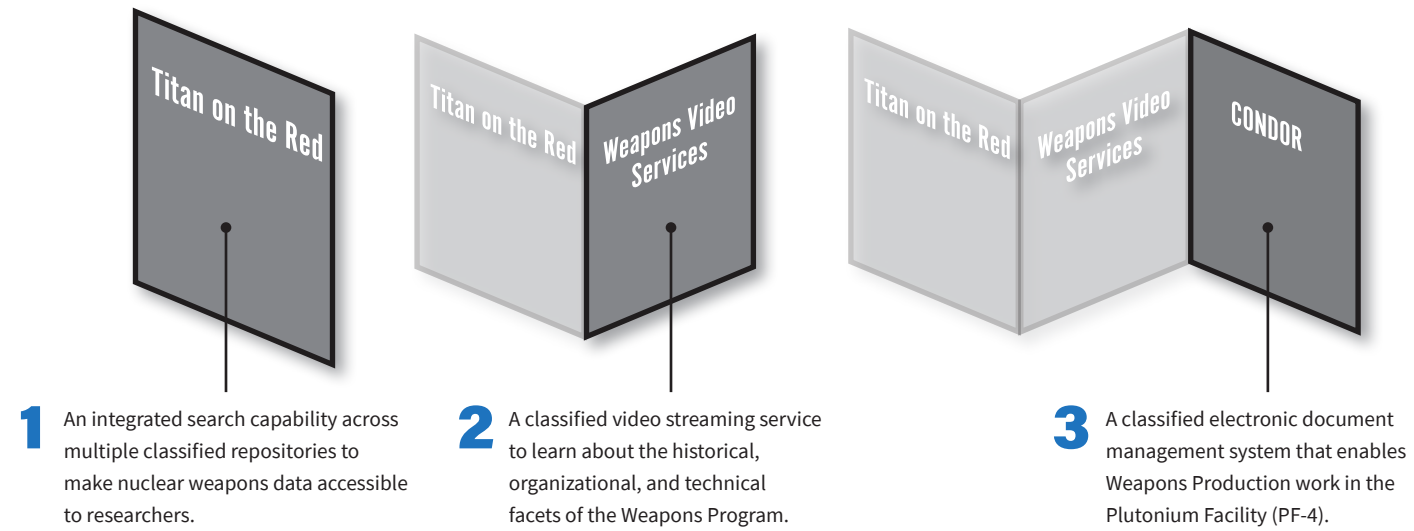
The Division is made up of three Groups and one support program:

- **Secure Networks and Assurance (SNA)** combines related disciplines in IT operations, network security, and software engineering with a goal of encouraging a security-focused DevOps culture to support programs across the Weapons Program.
- **Secure Information Services (SIS)** provides a wide range of services to support the Weapons Program, including management of the National Security Research Center, classified digitization services, and historian services.
- **Weapons Mission Technology (WMT)** provides technical development and support for key weapons mission software tools.
- **Weapons Knowledge Management (WKM) Program** is a core capability for knowledge learning and sharing across multidisciplinary fields in the weapons program.

Simply put, our organization and its strategies are critical to LANL’s mission success. The following pages outline WRS’s strategic and organizational goals for the coming years, each carefully and purposefully conceived to guide our staff, meet the needs of our customers, and facilitate the Lab’s important work.



Meeting Mission Needs



National Security Research Center

The National Security Research Center (NSRC) is one of the largest, most-dynamic libraries in the federal government, and houses the world’s most-comprehensive collection of nuclear security materials. The center contains millions of documents, films, books, and other materials related to the development, testing, and production of nuclear weapons.

An expanded NSRC further supports LANL scientists, engineers, and researchers by offering increased accessibility to more materials. Just a relatively small portion of the NSRC’s millions of materials is available electronically. However, these nuclear security materials, some of which do not exist elsewhere, are vital to Weapons Program scientists, engineers, researchers, and other staff.

Expanding the accessibility to these collections increases the support that the NSRC provides to those who work directly on behalf of the Lab’s national security mission. This endeavor is outlined in the NSRC’s five-year strategic plan.

NSRC Strategic Goal 1

A document collection and customer base that encompass both the entire Laboratory and selected external organizations.

Objective 1: Enhance NSRC partnerships with internal and external organizations to broaden the NSRC’s customer base at the Lab.

Strategy: Develop new partnerships with other NNSA labs and sites, as well as DoD organizations, while strengthening existing external partnerships and gleaning best practices from well-established partner organizations.

Efforts will be initiated in 2021 and be ongoing.

NSRC Strategic Goal 2

A comprehensive set of digitized collections that are cataloged and searchable using artificial intelligence/machine-learning tools.

Objective 2: Expedite researchers’ discoverability of the NSRC collections through the use of automated cataloging and search tools.

Strategy: Implement a natural-language, artificial intelligence/machine learning-based system to allow digitized collections to be searched, while maintaining security and need-to-know protocols.

Efforts will span 2021 – 2026.

NSRC Strategic Goal 3

A physical collection of fully digitized and catalogued materials (90 percent remains) by establishing accelerated digitation labs and processes.

Objective 3: Improve quality control, indexing, and storage processes while implementing NARA-digitization standards.

Strategy: Obtain production-scale equipment and develop processes to accelerate digitization of physical collections.

Efforts will span 2021 – 2023.

NSRC Strategic Goal 4

Increase staff’s skill levels, continuing education opportunities, and professional certifications.

Objective 4: Grow staff’s knowledge of nuclear weapons’ science and history to provide the highest degree of customer service and collection curation.

Strategy: Obtain production-scale equipment and develop processes to accelerate digitization of physical collections.

Efforts will span 2021 – 2023.

NSRC Strategic Goal 5

Fully funded staff, maintenance contracts, equipment upgrades, and ongoing initiatives.

Objective 5: Secure funding for a permanent facility to house film media, additional storage for new collections, and any necessary future expansions of digitization operations.

Strategy: Work with the Lab’s senior management and the federal program manager to secure long-term and permanent funding sources.

Efforts will span 2021 – 2026.

Nuclear Science Data Solutions

The inception of the Nuclear Science Data Solutions (NSDS) improves the coordination of LANL’s nuclear science data. This includes the collection, integration, storage, and access of the vast collections of classified technical data generated every day at the Lab.

Through the NSDS, WRS is providing guardianship over Weapons Program data assets that don’t otherwise reside in a managed repository. The NSDS initiative focuses on archiving and coordinating raw experimental data that might be used to inform important Weapons Program decisions.

The NSDS will facilitate the implementation of data management best practices across the Weapons Program by standing up a data governance council in order to standardize processes, prioritize data projects, and advise on the development of unclear data ownership and need-to-know decisions. The data created by experimental science programs and technical science organizations are critical to stockpile stewardship programs. The NSDS governance of the Lab’s weapons data is integral to making informed research decisions.

The NSDS includes the creation of a central and searchable inventory of various data sources, eventual connection to existing data repositories, and a professionally managed repository for data owners who have this need. The integration of data provides meaningful search results, analysis, and interpretation.

NSDS Strategic Goal 1

A populated classified repository designed for the management and re-use of nuclear weapons data created by component or model validation experiments.

Objective 1: Implementation of an unclassified environment to evaluate the tool’s functionalities and to identify vulnerabilities before a classified installation.

Strategy: Complete benchmarking, initial evaluations, and tool purchases. Implementing initial analyses requires

- evaluating the system and tool,
- procuring pilot software,
- conducting an internal pilot,
- purchasing an unclassified license, and
- beginning to inventory potential Weapons Program data sources that may be connected to or ingested by the tool.

Efforts will continue through 2021.

NSDS Strategic Goal 2

An inventory of existing unclassified and classified data repositories in order to provide a map of Weapons Program data assets.

Objective 2: Document LANL Weapons Program data standards to apply to the management of all experimental data needed for the Weapons Program missions. A full picture of what data exist, where they reside, and who owns them will vastly improve the efficiency and effectiveness of research in the Weapons Program as more staff access data relevant to their work.

Strategy: Elaborate on the inventory of Weapons Program classified and unclassified data sources.

Efforts will continue through 2021.

NSDS Strategic Goal 3

A Nuclear Weapons Data Governance Council to act as an advisory team for the management of nuclear science data.

Objective 3: Establish and cultivate a data governance council specific to the Weapons Program in order to provide standardization of data management processes across the directorate.

Strategy: Build support for a management-level governance council by exposing risks and benefits to the program. Establish the governance council with clear goals and in alignment with other governance initiatives. Ensure the council endures by involving those dedicated to improving data management at the Lab and by identifying goals that are substantial and impactful.

Efforts will continue beyond 2021.

NSDS Strategic Goal 4

An access controlled and managed capability for classified nuclear science data.

Objective 4: Implement a data repository tool for the Weapons Program on the classified network.

Strategy: Evaluate and pilot a classified data repository and basic data search capability in preparation for the release of the data management tool in full production. Realizing classified data repository capabilities requires the successful completion of a data source connection, a repository proof, an integrated search connection, final tool selection, data governance council establishment, and documentation of the baseline inventory of data sources.

Efforts will span 2021 – 2026.

NSDS Strategic Goal 5

A meaningful source of data knowledge for the Weapons Program.

Objective 5: Expand and connect more data sources to the data repository tool.

Strategy: Establish interactive connections to managed repositories and add unmanaged datasets to the WRS data repository tool.

Efforts will continue through 2025.

NSDS Strategic Goal 6

Data knowledge insight for researchers and decisionmakers in the Weapons Program.

Objective 6: Enable an integrated data search capability and establish analytics capability.

Strategy: Begin an evaluation of analytics tools that will leverage the data available through the WRS repository tool, while identifying the potential for connectivity between data sources to provide more informed analyses.

Efforts will continue through 2023.



Weapons Knowledge Management

Knowledge retention activities are developed and implemented by WRS’s Weapons Knowledge Management (WKM) to improve employees’ contribution to the LANL mission by bolstering their knowledge of the Weapons Program. ReGenerate (creating videos that capture technical expertise), the classified Weapons Video Streaming service (delivery of classified videos to the desktop), the introductory Nuclear Fundamentals Orientation modules (welcoming new and transition Weapons staff), and ontology efforts (mapping weapons technical information for improved search and access) all ensure information is captured, organized, integrated, and transferred. The overarching goal is to mitigate knowledge loss while assuring knowledge sharing within the Weapons Program.

WKM Strategic Goal 1

A program (ReGenerate) that creates a video database of essential scientific and technical knowledge for the current and future nuclear weapons workforce.

Objective 1: Ensure essential scientific and technical knowledge are available through a targeted video capture initiative called ReGenerate.

Strategy: Conduct ReGenerate’s video-capture pilot to standardize the process and tools, followed by the implementation of those standards.

Pilot efforts will continue through 2021. Program implementation begins in 2022.

WKM Strategic Goal 2

A classified Weapons Video Service (WVS) that delivers historical and current videos of interest to the Weapons Programs researchers, engineers, and manufacturing staff.

Objective 2: Provide a classified weapons video service for the Laboratory’s Weapons Program in support of Weapons Engineering (ALDW), Weapons Physics (ALDX), and Weapons Production (ALDWP).

Strategy: Deliver the WVS streaming application to Weapons Program customers for desktop streaming of classified videos with application maintenance, evaluation of functionality, and the addition of classified videos will follow on an ongoing basis.

By February 2021, Weapons Knowledge Management will roll out the streaming application to one program area as a pilot followed by a full roll out by April 2021. Further population of the critical classified videos will continue through 2022.

WKM Strategic Goal 3

A broader Nuclear Fundamentals Orientation (NFO) program to include a classified module and enhancements to the existing unclassified program.

Objective 3: Expand NFO in order to accelerate new and transition employees’ assimilation into the Weapons Program by improving their understanding of the LANL nuclear mission while reinforcing their roles in that mission.

Strategy: Continue implementation and evaluation of unclassified modules on a quarterly basis as well as develop and implement a classified orientation module.

By September 2021, we will deliver the third NFO module, which is the classified version. Implementation of the complete three-module orientation will be ongoing.

WKM Strategic Goal 4

Nuclear weapons ontologies that capture the structure and relationships of knowledge areas in a machine-readable format.

Objective 4: Support the execution of an enhanced search application by providing a machine-readable ontology relating to weapons systems, components, and testing, as well as map the relationships across taxonomies to enable search and retrieval between them.

Strategy: Establish knowledge elicitation and ontology standards and processes as demonstrated by the development of the weapons design and test ontology.

By September 2021, Weapons Knowledge Management will deliver a weapons design and test ontology in a machine readable (Web Ontology Language, or OWL) format. Documentation of the ontology-building process will be completed for repeatability in additional weapons knowledge domains moving forward.

Nuclear Weapons Cyber Assurance Laboratory

The Nuclear Weapons Cyber Assurance Laboratory (NWCAL) mitigates mitigates risk by performing cyber-physical and software vulnerability assessments on critical manufacturing equipment and mission software tools. This ensures more secure research, design, produc-tion, and testing processes.

The implementation of this WRS initiative contributes to LANL’s mission success by strengthening the design, engineering, and manufacturing capabilities of nuclear weapons mission testing and production infrastructure.

NWCAL mitigates risk at a time of increased threat to the national security mission and weapons programs. This mission-critical work includes malware reverse engineering, malware impact analysis within existing engineering packages, software and firmware scanning, and cyber-physical analysis and assessments.

In order to achieve this mission success, NWCAL staff works collaboratively with partners internal and external to the Lab. The latter includes the Department of Energy, National Nuclear Security Administration, Department of Defense, National Security Agency, national laboratories and nuclear security campuses, academic institutions, and more.

NWCAL Strategic Goal 1:

A fully staffed, operational cyber assurance office and research laboratory.

Objective 1: Support daily activities and technical tasks, including implementing institutional services such as storage, backup, and more, while authoring a research plan, a capability road map, and quarterly and annual reports further codifies the nascent roles of the staff and services.

Strategy: Secure full funding from multiple sponsors to further establish NWCAL’s services, staff, and location.

Efforts will continue through 2023.

NWCAL Strategic Goal 2:

An Operation Technology Assurance (OTA) program that provides surety to the Weapons Program leadership within the Production Agency and within the Nuclear Enterprise Assurance (NEA) program

Objective 2: Ensure equipment, firmware, and software are resilient to adversarial impacts.

Strategy: Develop a formal assessment framework, standardize data collected and analyses performed, automate repetitive actions, and establish response capability to further advance OTA.

Efforts will continue through 2023.

NWCAL Strategic Goal 3:

A Software Assurance (SwA) program developed for the critical engineering and other mission software.

Objective 3: Advance software assurance in tandem with related organizations to instill confidence among Weapons Program users.

Strategy: Form partnerships related to the research and development efforts within Global Security, NEA, academia, and national agencies. Develop hardware orchestration, scripted workflows, automated reporting, new binary analysis tools, and the ability to reverse engineer tool sets.

Efforts will continue through 2023.



Weapons Research Services Organizational Goals

The effectiveness of the WRS Division requires strategic intentions and continued growth. The Division’s leadership have identified the following high-priority objectives:

1. Operational Excellence

Objective: Streamline further the daily operations of the WRS Division. This includes the tasks and requirements needed to run the business of the Division.

Strategies:

- Form Division-wide teams to identify areas for improvement; and
- Implement improvements in a minimum of three defined areas.

Key results:

- Expand deployment of services/tools to and for stakeholders in reduced time;
- Improve productivity processes that influence quality of services and tools deployed to and for stakeholders; and
- Create a culture of continuous improvement.

2. Outstanding Staff

Objective: Recruit, develop, and retain WRS staff on the basis that they assure success for our customers and demonstrate a passion for our mission.

Strategies:

- Initiate a team to identify specific diversity metrics to be tracked and and also initiate a mechanism for those metrics to be track by Group Leaders;
- Write, pilot, and finalize the WRS Division Workforce Development Plan;
- Partner with HR to host a recruiting event for critical positions and improve hiring time; and
- Form a team to develop an incentive/reward pilot.

Key results:

- Manage staff diversity goals to ensure diverse thought and engagement;
- Implement workforce development plans, including career development programs;
- Achieve a balance of expertise levels for key roles within the Division (i.e., WRS is staffed by entry-, mid-, and expert-level personnel in any critical knowledge area);
- Formalize a program for incentives and rewards above and beyond the LANL HR institutional programs; and
- Demonstrate a staff retention rate that meets or exceeds that of the Lab’s retention of employees.

3. Strategic Partnerships

Objective: Increase our responsiveness to customer needs by growing partnerships with internal and external organizations to more effectively meet those needs.

Strategies:

- Identification of as well as leadership and participation in key problem-solving initiatives where partnerships will strengthen outcomes;
- Provide funding support for travel to potential partner sites, as well as host meetings at LANL; and
- Identify and obtain funding to cover expenses of project scope execution, including the ability to obtain seed money for the initiation of pilots.

Key results:

- Increased customer satisfaction;
- Increased value and efficiency to existing customers; and
- Expanded customer and partnership bases.

4. Fiscal Management and Financial Growth

Objective: *Positive management of relationships with federal and internal organizations with demonstrated excellent fiscal management on an annual basis to facilitate continued resource growth.*

Strategies:

- Offer opportunities to learn and practice program management;
- Provide budget management opportunities at multiple levels of leadership within WRS;
- Ensure WRS program leads attend DDW program meetings;
- Identify processes to turn project funding into a sustained program with recurring funding; and
- Explore tools that may be useful to program leads, specifically those that will give a full cost picture for each cost code.

Key results:

- Establish and develop strong program relationships with federal and internal program customers; and
- Grow funding resources to meet the most important Division initiatives.

5. Effective Messaging

Objective: *Develop and implement tactical strategies to reach general Lab audiences and WRS customers and stakeholders.*

Strategies:

- Cultivate awareness of WRS and its capabilities to a Lab-wide audience through a variety of platforms (LANL Today, LANL Radio, ALDX newsletter, presentations, speaking events, one-time publications) and a variety of media (printed marketing materials (posters, rack cards), videos, podcasts, stories, books, magazines).

Key results:

- Reach both Lab-wide and Weapons-specific audiences on a regular basis with frequent, consistent messaging via a variety of media.

Conclusion

Weapons Research Services strengthens the research, development, and knowledge management activities of the Weapons Program. Our work enables code developers, weapons designers, engineers, manufacturing experts, and experimenters to certify the stockpile and investigate national and global security questions.

Our mission is to help protect our national security by preserving and safeguarding nuclear knowledge for tomorrow’s discoveries. We execute this through the five organizational goals and four strategic initiatives outlined in this document.

The WRS organizational goals further develop the WRS culture and our strategic initiatives are aligned with the Division’s primary services. Together, they demonstrate WRS’s vital services that help achieve LANL’s mission success.

